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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/785,477	02/20/2001	Hiroki Kanai	520.39648X00	5481

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SUITE 370  
ALEXANDRIA, VA 22314

EXAMINER
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CHACE, CHRISTIAN

ART UNIT	PAPER NUMBER
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2187

DATE MAILED: 03/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/785,477

**Applicant(s)**

KANAI ET AL.

**Examiner**

Christian P. Chace

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 19-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 14 January 2005 has been entered.

### ***Response to Amendment***

This Office action has been issued in response to amendment filed 14 January 2005, and entered upon the filing of an RCE. Claims 19-23 are pending. Applicants' arguments have been carefully and respectfully considered, but even light of the instant amendments, are not persuasive. In addition, new grounds for rejection have been necessitated by the instant amendments. However, as this is the first action on the merits following an RCE, this action has NOT been made final.

### ***Claim Objections***

Claim 19 is objected to because of the following informalities: the letters "s" and "a" appear next to each other – it appears to be a typographical error. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 19-23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

With respect to independent claim 19, a first disk controller receiving from a host *each* write request for the data in the disks of a second disk controller does not appear to be in the disclosure as originally filed. (emphasis added).

The first disk controller *always* sending the write request *without regard to data stored in the cache memory of the first disk controller* does not appear to be in the disclosure as originally filed. (emphasis added).

Applicants are required, in response to this Office action, to point out exactly and clearly where in the originally filed disclosure the italicized elements *supra* are disclosed, if they are, indeed, disclosed.

Claims 20-23 depend upon claim 19 and are rejected for at least the reasons set forth *supra* with respect to same.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 1-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Independent claim 19 recites that the first disk controller *always* sending the write request *without regard to data stored in the cache memory of the first disk controller.* (emphasis added). Examiner is unable to determine the metes and bounds of “without regard” to the data stored in the cache of the first memory controller.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 19-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Otterness et al (US Patent #6,460,122).

With respect to independent claim 19, a storage system is disclosed in the title.

A plurality of clusters is disclosed in figure 11 as Complex/Controller A and Complex/Controller B, with each being a cluster. Examiner notes that the figure shows both controllers to be labeled as “A.” However, examiner interprets this as a typographical error in the patent, and interprets the second controller as “B.”

A communication path which connects each of the clusters is disclosed in figure 11 as "Communications Fibre Loop."

A disk controller (in each cluster) is disclosed as Processor Complex A or B, respectively.

A plurality of disk drives is disclosed in figure 11 as the disk drives shown connected to the disk fibre loop in each of the clusters.

A disk interface in each of the disk controllers which connects to the disk drives of the cluster is shown in figure 11 as the "disk fibre loop."

A cache memory is disclosed in figure 11 as DATA caches in the processor complexes.

A control memory is inherent in light of the disclosure at column 23, lines 7-8, which discuss cache control firmware. Inherently, if there is cache control firmware, there must be a place to store it. That place to store it is interpreted by examiner to be a control memory.

Examiner also notes that all of the above is disclosed in applicants' admitted prior art figure 17 of the instant disclosure, as well.

"Updated data" is given its broadest reasonable interpretation by examiner to be data. During a write operation, any data written could be considered "updating data" as it is writing "newer" data to that area of memory.

When a first disk controller of a first cluster receives from a host computer each write request (shown, as applicants point out in the instant remarks at page 11, as figure 13), requesting to update (write) data stored in disk drives of a second disk controller of

a second cluster is shown in figure 13, #703, where the first controller checks all other controllers to check for data in it's cluster (for disk access reasons, as disclosed in #707 of figure 13. The first disk controller checking whether the data is stored in the cache memory of the second disk controller, and if the data is not stored in the cache memory of the second disk controller, the first disk controller always sending the write request to the second disk controller via the communication path, "without regard to data stored I the cache memory of the first disk controller is disclosed in figure 13 as step #704, where the first controller checks other controllers to see of this data (the "data to be updated") is there. If it is not there, (i.e., "without regard" to that data) the process passes to #707 in figure 13, where it is determined that another controller has the data, and then to #705, where the data is demoted to the appropriate controller.

Figure 13, steps #703, #704, #705, and #707 also anticipate, as discussed supra, that, in response to the write request from the first disk controller (#704) and when the data to be updated is not stored in the second disk controller's cache (#704 – line to #707), the second disk controller writes the data to the disk drives of it's cluster via the disk interface based on the write request (for disk access reasons in #707, process passes to #705, where data is demoted to appropriate controller.

All of this process is also discussed from column 25, line 65 into column 26, line 50. It is important to note that "demotion" is writing back data to what is, in fact, known in the art as a lower-level cache, such as the actual disk, as is discussed in column 4, lines 45-65, for example, but is referred to by Otterness et al as "higher" level caches, which, ordinarily, would be closer to the processor, not farther away.

With respect to claim 20, the data is stored in the cache of the second disk controller, the second disk controller updates the data by writing the data into the second disk controller cache is disclosed in figure 13, #705.

With respect to claim 21, each control memory of the clusters storing a cache directory to identify the disk controller having a disk drive which stores the data in that cache memory is disclosed in figure 6, #514, which shows the mapping of cache lines of system drive sectors. Column 15, lines 40-43 discusses the hash table shown in figure 6, and how it allows the cache control firmware (inherently stored in the control memory) to perform a quick look-up to determine if the data is already cached [or in the disk].

With respect to claim 22, the first disk controller receiving a completed report indicating completion of the writing of data from said second disk controller, and thereafter sending the completed report to the host computer is disclosed in figure 13, #706.

With respect to claim 23, the second disk controller inhibiting access to the data until the first disk controller sends the completed report is shown in figure 13, as no activity is shown to happen from #705 (where the data movement is complete) to #706.

### ***Response to Arguments***

With respect to applicants' argument that the above described features of the present invention now more clearly recited in the claims are not taught or suggested by any of the references of record, particularly Otterness, examiner respectfully disagrees. To substantiate applicants' argument, applicants point to figures 9-11 and column 6, lines 11-42 of Otterness. Examiner respectfully notes that these citations were not used



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as the basis for rejection for the limitations of the claim at issue – figure 13 is applied.

Accordingly, these arguments are irrelevant.

Examiner maintains that the applied reference meets the claim limitations in so far as they are clear, and applicants appear to be arguing that because their claimed invention does not include some of the additional steps of Otterness, that is allowable for that reason. With all due respect, if that is, indeed, applicants' argument, this logic is backwards, so to speak. There is no caveat in 35 USC 102 that precludes prior art from disclosing additional steps. It must simply anticipate the steps of the claimed application, which Otterness does.

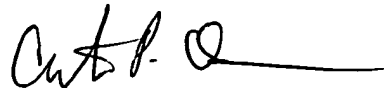
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian P. Chace whose telephone number is 571.272.4190. The examiner can normally be reached on MAXI FLEX.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on 571.272.4201. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'C. P. Chace', followed by a horizontal line extending to the right.

Christian P. Chace  
Examiner  
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